JUNE
1970
45¢

# Live Steam

THE MONTHLY MAGAZINE FOR ALL LIVE STEAMERS AND LARGE-SCALE MODEL RAILROADERS

## in this issue

Rutland
Ten-Wheelers

Gold Spike
at Riverside

Live Steam
magazine

JUNE 1970 VOL. 4 NO. 6

CONTENTS

2 *Rutland Ten-Wheelers*

5 *Gold Spike Ceremony at Riverside*

6 *SOFT SOLDERING for the apprentice*

8 *So You Want To Build A Live Steam Locomotive*

9 *building the RARITAN*

10 *Live Steam News*

11 *Live Steam News Scheduled Meets*

12 *mail stop*

14 *... from the cupola*

COVER PHOTO

The Rutland's Ten-Wheeler #78 takes the northbound milk train #87 out of Burlington, Vermont in grand style. Photographer Philip R. Hastings recorded the action on film back in 1947.

SUBSCRIPTIONS: $4.50 per year in U. S. A. and Canada (U. S. Funds), $5.50 per year (U. S. Funds) in other countries.

SUBMISSIONS of material for publication are considered to be made gratis unless the contributor so specifies in his letter.

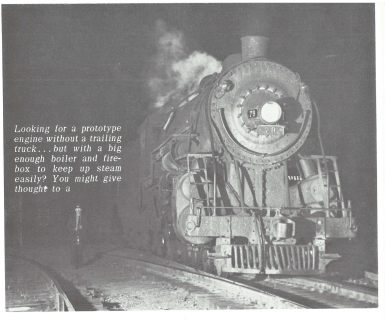
COPYRIGHT © 1970 LIVE STEAM. All rights reserved. This magazine or parts thereof may not be reproduced in any form without permission in writing from the publisher. Printed in U.S.A.

PUBLISHED MONTHLY by William C. Fitt, 1285 North Twenty-Seven Road, Cadillac, Michigan 49601. Phone 616 — 775-9296

Address all mail to

LIVE STEAM
Post Office Box 635
Cadillac, Michigan 49601

SECOND CLASS POSTAGE PAID AT CADILLAC, MICHIGAN



*Looking for a prototype engine without a trailing truck... but with a big enough boiler and firebox to keep up steam easily? You might give thought to a*

PHILIP R. HASTINGS

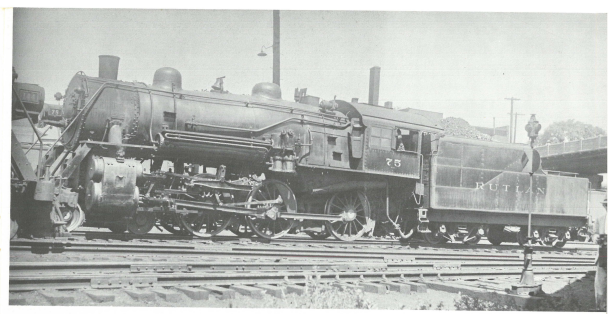
# Rutland Ten-Wheeler

The Rutland's class F–2¡ 4–6–0's were built at Alco's Schenectady Works (Nos. 51564–51569) in 1912 while the New York Central & Hudson River R.R. controlled the Rutland. They were lettered "New York Central Lines" and numbered 2074–2079 to fit into the scheme of the NYC's identification system. In 1913, though, the Rutland numbering system was inaugurated and the F–2¡'s became numbers 74 through 79.

Other than five class F–105a 4–6–0's built in 1915 for the Pittsburgh, McKeesport & Youghiogheny (P&LE), the F–2¡ Ten-Wheelers were the newest of their type on the New York Central System. They were the longest, most powerful 4–6–0's on the NYC and equalled or surpassed many early Pacifics.

The *Green Mountain Flyer* from Montreal to Boston with an F–2¡ on the head end carried New Englanders

WALTER H. ALLEN COLLECTION




WALTER H. ALLEN COLLECTION

from town to town for many years. The *Milk Trains* which were an important source of revenue for the Rutland, were regularly hauled by these modern Ten-Wheelers. Often they were seen on freight runs – even double-heading with 2–8–2's and 4–8–2's.

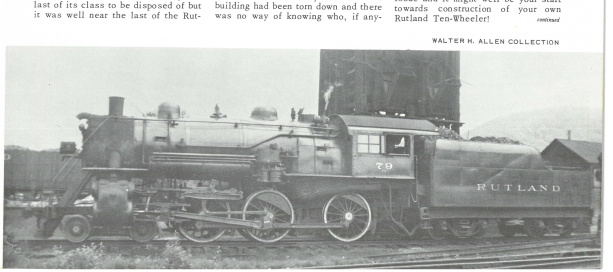
The 1950 reorganization of the Rutland *Railroad* into the Rutland *Railway* brought diesels onto the scene and mass retirement of steam power. The 77 was first of the F–2j's to be retired in October 1951, followed by the 75 and 78 in November and the 79 in December of that same year. The 76 was next in August 1952. When the first engine of the F–2j Class, the 74, was removed from the roster in August 1953, it was not only the last of its class to be disposed of but it was well near the last of the Rutland's steam power. Only two 0–6–0 switchers (Schenectady 1914 and 1924) and four 4–8–2's – the Rutland's newest steam locomotives (Schenectady 1946) – remained.

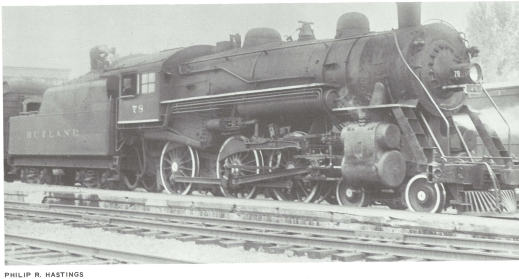
Fortunately, though, the F–2j class remains well documented for all model builders. By chance, Live Steamer Walter Allen visited the Rutland headquarters some time ago and was able to purchase a quantity of drawings that remained. Elevation and Section Erection cards for the F–2j 4–6–0's in 1½" scale were included and several detail drawings. When he came to list them for his reference some time later, he discovered that the detail sheets all applied to the Rutland's 4–6–2's. By that time the building had been torn down and there was no way of knowing who, if anyone, was able to get the elevations and sections for the Pacifics!

Jim Shaughnessy's book, *The Rutland Road*, not only gives a complete and interesting history of this railroad but includes no less than 31 photos of the F–2j class engines from just about every angle. The combination of official erection card drawings from Walt Allen and the wealth of photographed detail in Jim Shaughnessy's book provide Live Steamers with plenty of information to work from. Even if you don't intend to build an engine right now, the drawings and book make good collector's items and reference material. Both can be ordered from information on page 13 of this issue and it might well be your start towards construction of your own Rutland Ten-Wheeler!

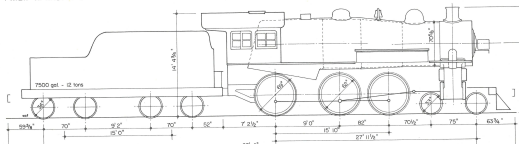
*continued*

WALTER H. ALLEN COLLECTION






PHILIP R. HASTINGS




## PROTOTYPE SPECIFICATIONS

| | | |
|---|---|---|
| Cylinders | | 22½" x 26" |
| Valves | | 12" Piston Valves, 6½" travel, 1-1/16" lap, 1/8" lead forward, 3/8" lead back, 1/16" exhaust clearance |
| Valve Gear | | Walschaerts |
| Boiler | Pressure | – 200# p.s.i. |
| | Tubes | – 225 2" o.d. |
| | Flues | – 32 5-3/8" o.d. |
| | Length | – 15'-11" |
| | Arch Tubes | – 4 3" o.d. |
| Firebox | Length | – 105-1/8" |
| | Width | – 74⅝" |
| | Grate Area | – 54.93 sq. ft. |
| Heating Surfaces | Tubes & Flues | 2576.7 sq. ft. |
| | Firebox (Incl. arch tubes) | 206.0 sq. ft. |
| | TOTAL | 2782.7 sq. ft. |
| | Superheater | 581.7 sq. ft. |
| | TOTAL | 3364.4 sq. ft. |
| Weight in Working Order | | |
| | Engine Truck | 56,000# |
| | Drivers | 155,000# |
| | Engine Total | 211,000# |
| | Tender | 148,400# |
| | Engine & Tender | 359,400# |
| | Tender Empty | 62,400# |

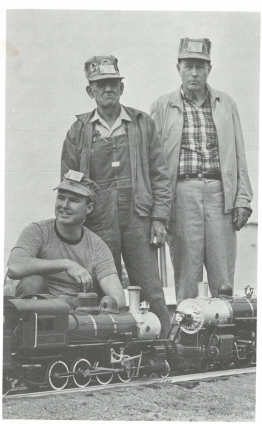
Tractive Effort – 32,450#
Ratio of Adhesion – 4.9
Brake Cylinders – 14"
Superheater – Schmidt

## LIVE STEAM CONVERSIONS

| Prototype | Scale ¾" = 1'0" | Scale 1" = 1'0" | Scale 1½" = 1'0" |
|---|---|---|---|
| 22½" | 1.406" | 1.874" | 2.813" |
| 26" | 1.625" | 2.166" | 3.250" |
| 33" | 2.063" | 2.750" | 4.125" |
| 36" | 2.250" | 3.000" | 4.500" |
| 52" | 3.250" | 4.333" | 6.500" |
| 59-3/8" | 3.711" | 4.948" | 7.422" |
| 62" | 3.875" | 5.165" | 7.750" |
| 63⅜" | 3.985" | 5.310" | 7.969" |
| 69" | 4.313" | 5.750" | 8.734" |
| 70" | 4.375" | 5.831" | 8.750" |
| 70½" | 4.406" | 5.873" | 8.813" |
| 70-5/8" | 4.414" | 5.883" | 8.828" |
| 75" | 4.688" | 6.250" | 9.375" |
| 82" | 5.125" | 6.831" | 10.250" |
| 7' – 2½" | 5.288" | 7.205" | 10.563" |
| 9' – 0" | 6.750" | 9.000" | 13.500" |
| 9' – 2" | 6.875" | 9.163" | 13.750" |
| 9' – 5" | 7.313" | 9.750" | 14.625" |
| 14' – 4⅜" | 10.797" | 14.390" | 21.594" |
| 14' – 9⅝" | 11.948" | 14.786" | 22.188" |
| 15' – 0" | 11.250" | 15.000" | 22.500" |
| 15' – 10" | 11.875" | 15.827" | 23.750" |
| 27' – 11⅞" | 20.969" | 27.947" | 41.938" |
| 60' – 4" | 45.250" | 60.309" | 90.500" |
| 70' – 7-1/8" | 52.945" | 70.566" | 105.891" |
| 56,000# | 20.048# | 46.648# | 150.640# |
| 62,400# | 22.339# | 51.979# | 167.856# |
| 148,400# | 53.127# | 123.617# | 399.196# |
| 155,000# | 55.490# | 129.115# | 416.950# |
| 211,000# | 75.538# | 175.763# | 567.598# |
| 359,400# | 128.665# | 299.380# | 966.786# |

# Gold Spike Ceremony at Riverside

Report by Francis H. Smith
Photos by W. Beverly Maloney



At 1:05 p.m. on Sunday, January 26th, 1970, the Riverside Live Steamers marked completion of a half-mile 1" scale track. A Gold Spike supplied by Harry Dixon, West Coast Regional Secretary of the Brotherhood of Live Steamers was driven by William Robert Babb, President of the Riverside Live Steamers. As this historic event was taking place, (above) Jack Sessums' green and gold *Orange Valley Western* 2–8–0 and Andrew Carlson's similarly trimmed and lettered 4–6–2 stood by ready to touch couplers at completion of the ceremony. Left to right along the track were Jack Sessums, President Babb driving the Gold Spike, Andrew Carlson and James Keith. The interested young by-stander in the background is unidentified.

Immediately after the coupler-touching conclusion to the festivities there was an on-site discussion (left) of 1" scale standards since the couplers of the two honor-position engines didn't line up! Andrew Carlson (left to right) beams with relief when the decision is reached that his Pacific's coupler height was accurate – but President Babb and James Keith express obvious concern that such a discrepancy had heretofore gone undetected!

So it's back to the club shop (below) for Jack Sessums' 2–8–0 and you can bet there will be plenty of friendly "ribbing" at meetings in the club house (SP caboose #899).

Organized in 1966, the Riverside Live Steamers now have 2650 feet of 1" track and 6500 feet of 1½" track in operation. A 20 x 48 concrete block engine house stores equipment and a hydraulic lift turntable serves 24 steaming tracks which will have all facilities for air, water and electricity this summer.

# *SOFT SOLDERING for the apprentice*

*by Jack D. McKenty, M.D.*

## *Definitions*

*Brazing:* A joining process using a filler metal having a working temperature above 800°F, but below the melting point of the metals being joined.

*Soldering:* A joining process using a filler metal having a working temperature below 800°F and below the melting points of metals being joined.

Model engineers usually refer to soldering as "soft soldering" to distinguish it from "silver soldering." Silver soldering is a brazing process using a filler metal containing a percentage of silver. Purists refer to it as "silver brazing." Pooh!

Soft solder is used to make low resistance electrical connections (in both power circuits and electronic wiring), to fasten together mechanical parts so they won't come undone with vibration, and to caulk or seal low-pressure, low-temperature vessels, such as teapots and small locomotive tenders.

Joints made with soft-solder can be quite strong, (soft solder makes the joints in modern copper plumbing lines, for example), but soft solder loses its strength at higher temperatures. It is down to about 50% of its cold strength at the temperature of boiling water, and at 300°F it has only about 10% of its strength at room temperature.

This means that, whenever possible, joints to be soldered should be mechanically strong even before the solder is added.

## *Tools and Materials*

*Solder:* Is an alloy of tin and lead. The percentage of tin is given first and ranges from 40 to 63%.

The 40–60 solder is "Plumber's solder". It has a wide "plastic" range. At temperatures below its "liquidus" form it can be pushed around and molded like thick paint. It is often used to fill dents in fenders and is molded to the original pre-dent outline, before it sets solid.

50–50 solder is general purpose solder. It has a narrower plastic range.

60–40 solder, and "eutectic solder" (63–37) are radio or electronic solders with a very short plastic range. Eutectic solder has no plastic phase at all. It is either solid or liquid, depending on the temperature. The radio solders have the advantage of being fast-setting when they cool. They also have the lowest melting points.

Tin is more expensive than lead, so solder gets more expensive as the tin percentage rises.

## *Sources of Heat*

"Soldering coppers" are still used by tinsmiths. A soldering copper, or bit, is a block of copper on a handle. It is heated in a flame and stores enough heat to heat the joint to be soldered. The coppers come in various artistic shapes such as axe heads or spear points. They are available from large hardware distributors, but are not particularly useful for our work.

The propane torch kit usually has a "soldering iron" burner with it. A small propane flame keeps it hot while you are working. But using the smallest regular burner by itself works very well, too. Or a Prestolite tank, or the smallest tip on a gas welding torch. Anything that heats the joint works. Hot it up in your oven.

Soldering guns are familiar. They come in a variety of sizes and all but the largest are used only in radio work. They are very convenient to use, and have the advantage of being hot only when you have the trigger pulled.

Soldering irons, the electrically-heated kind, are also familiar. They also come in a variety of sizes and the tiniest may run on batteries. They take a while to heat up, but they stay hot as long as they are in use.

Both guns and irons are used chiefly in electronics. If you are going into this field, decide early which you want to use. If you learn one, you will find it very inconvenient to use the other. I learned on a gun, and whenever I try to use an iron, I invariably burn myself on it.

If I were starting over, I would pick an iron. More and more work in electronics is with transistors and the like. The magnetic field around the tip of a busy soldering gun can destroy some of the more delicate gadgets. Irons are quite safe to use as far as any magnetic fields or induced currents are concerned, since the heating element is a distance away from the tip and is usually surrounded by metal.

## *Fluxes*

They perform three jobs: they clean the coat of oxide off the parent metal, they prevent new oxide from forming when the metal is heated, and they act as wetting agents to guide the liquid solder into the joint.

Many substances have been used as fluxes, including lard or tallow. A common one is Baker's fluid or "killed spirit". *It* is a zinc chloride solution and is sold by Sear's as Liquid Soldering Flux. Acid paste fluxes are available from the same source. Rosin is used as a flux for radio work. Acid fluxes must NOT be used in electronics. It is not usually possible to wash the flux off afterwards, and acid will corrode the joint. A rosin flux can be left there forever.

Both acid-core and rosin-core solders are available. They each contain the flux in jelly form inside the solder, which is in wire form. The rosin-core is convenient to use and essential for electronics.

## *Techniques*

Guns, irons, and coppers must all be "tinned" before, during, and after work. Clean the working surface with coarse emery paper or a fine file, coat it with flux, and heat it up. Apply solder to the hot surface, and wipe it around with an old rag. Make sure you have several thicknesses of cloth between you and the tool. Molten solder doesn't stick to the skin, but it will try very hard.

During the course of the work, wipe the tool again from time to time, and again when you are finished. For electronic wiring, a small dampened sponge can be used instead of a rag. Leave it on the bench, and wipe the iron or gun across it after every few joints.

Wherever possible, the surface to be soldered should be tinned prior to assembly. The technique is the same as above, except, of course, that an external source of heat must be used.

This is so important that most electronic parts (resistors, capacitors, etc.) come already tinned.

If you have a large quantity of parts to be tinned, they can be done on a production line basis by dunking them in a little pot of molten solder.

## *Soldering*

There are two cardinal rules to be remembered: If possible the joint should be mechanically strong prior to soldering, and the joint should be heated, not the solder. The solder is heated by the joint.

The parts must be clean prior to assembly. Solder does not stick to scale or oxide. The parts are cleaned, fluxed, and assembled. The joint is then heated (gun, iron, copper or naked flame) and a strip of solder touched to the joint. The solder melts and is sucked into the joint by capillary action. It will even flow uphill.

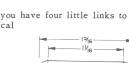
If it doesn't, the joint isn't hot enough. Apply more heat and try again. If it still doesn't work, you boobed on the cleaning and the fluxing.

Parts that have been tinned ahead of time are still fluxed prior to assembly.

## *Sweating*

This is similar to ordinary soldering, except that solder is not added to the hot joint. The parts are heavily tinned prior to assembly, and the joint is tightly clamped. The whole assembly is then heated to beyond the melting point of the solder, and when it cools again, the thing is done. It makes for a very neat appeamance, but the joints must be close fitting for it to work.

Sweating can solve a problem in holding small parts. Suppose you have four little links to make, which must be identical




*Hypothetical Link*
*Mild Steel - 16 ga. - 4 req'd*

Sweat together four pieces of 1/16" thick metal. The one 1/4" chunk can now be cut out and filed to shape, and the holes drilled. More heat separates the layers again, and you have four identical parts.

Sweating can also be used to hold parts in the lathe. Small washers, and what-not can be difficult to hold in a chuck. They can be sweated to a plate which is then fastened to a face plate, or they can be sweated onto the end of a rod or bar which is then held in a chuck. They are melted off again afterwards, but do the melting away from the lathe.

Whenever possible, the flux should be cleaned from the work after soldering, by hot water and brush, or acid pickle followed by rinsing in water. If the fluxes (except rosin) are left on, the joint may corrode.

## *Aluminum*

All the foregoing applies to copper, brass, bronze, gunmetal, and steel and iron, in any combination. Since all the books say that soldering aluminum is really quite easy, you just know it has to be difficult! It is.

There are two problems. One, the film of oxide which prevents aluminum from further corrosion won't come off with ordinary fluxes. Two, aluminum melts at an embarrassingly low temperature, without changing color first. You get busy trying to make the solder stick, and find yourself working on a puddle!

The oxide film must be scraped off, but you can't do it in the open air. It re-forms as fast as you file, sand, or scratch. The technique is to tin the parts by flowing a layer of molten solder across the hot component, and scratching at the surface *through* the solder layer.

The layer of liquid solder keeps the air away, and tins the aluminum as the oxide is scratched off. Once the parts are tinned, the joint can be completed in the ordinary way, with ordinary solder.

Hardware stores often have little kits for soldering aluminum, with special solder which you can get along without, and special brushes for scratching, which are essential.

But the best thing is to make the parts out of brass in the first place.

## *Electronics*

I am not going to discuss the special techniques used in electronic wiring since they don't have too much to do with our trade. You can add to your general knowledge by requesting the "booklet on soldering" from Mr. Earl F. Broihier, Heath Company, Benton Harbor, Michigan. Please mention LIVE STEAM Magazine in your request.

There will be future articles on two electronic gadgets: a speed control for small universal motors, and a small electro-discharge machine. The booklet will come in handy at that time.

SO YOU WANT TO BUILD A LIVE STEAM LOCOMOTIVE

by Joseph F. Nelson

CHAPTER 14

# BRAKES

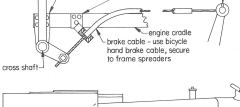
## BRAKES – POWER AND HAND

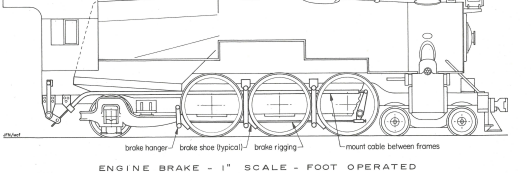
Live Steamers in general do not take brakes too seriously, particularly those who have heavy 1½" scale equipment and, perhaps, pull up to 10 or more cars loaded with kids and adults. Even when the Johnson bar is used to reverse the engine, by the time the train gets stopped, many a Live Steam engineer has had the bottom of somebody's caboose or rear car plastered against his headlight.

The writer is one of the first to say that much of the smaller equipment doesn't require brakes since there isn't much weight involved. Where track is laid on the ground, grabbing the car and digging one's heels into the roadbed can make a fairly good "emergency" stop. In this writer's opinion, it can be put into effect quicker than throwing the Johnson bar into reverse. Many Live Steam clubs, however, frown on this procedure since it does have a tendency to tear up the roadbed. It is effective for emergency stops with locomotives and one car carrying two children up to and including a 1" Pacific. It must be realized, of course, that if the engineer makes a habit of doing about 15 miles an hour and has his head in the cab or does "bird watching" (mind on girls), he will have to expect to rebuild somebody elses caboose now and then regardless of what kind of brakes he has. For running on a trestle, the engineer isn't in a position to grab the cab and dig his heels into the roadbed. It is to be realized that anybody can stop with no brakes if given enough warning. What we are talking about is the fellow coming out of a trance and discovering that the train ahead that he thought was halfway around the loop, is stopped just 20 feet ahead of him. We have another situation where parents turn their kids loose at a Live Steam club thinking that it is a glorified Kiddy Land. Watch out for kids!

## LOCOMOTIVE AND/OR TENDER BRAKES

It is a question as to which is the most effective! tender or locomotive brakes. The ideal way is to have brakes on both. For 1" scale, where a choice between the two must be made, the tender brake is the most effective. A 1" scale Pacific will weigh about 250# in working order with only the drivers having brakes. This means that about 150# will be effective for braking. On the other hand, the tender will weigh about 145# in working order and assuming that the engineer weighs 160#, we have about 305# available for brakes to work against. This means that with tender brakes, about twice the braking power can be applied than on the locomotive alone. It must be realized that brakes on both is the best way to go. For locomotive brake power, the foot-operated brake is very effective. Some Live Steamers object to locomotive foot brakes for esthetic reasons; however, steam or vacuum may be used to power locomotive and/or tender brakes. Steam has the disadvantage of leaving the brake system full of condensate where vacuum will leave the system completely dry. Remember, moisture does cause corrosion. The power cylinder or vacuum diaphragm will be somewhat of a problem to install on the locomotive due to lack of space between the frames on 1" scale but the tender installation is not too difficult for a vacuum installation since, by robbing the coal bunker of some space, the vacuum diaphragm can be easily installed. A removable box can cover the diaphragm. It is possible to install power brakes on 1" scale cars but it is not recommended due to the weight differential of 1" scale cars in loaded and unloaded condition. If enough power is applied to stop a fully loaded car(s), too much power will be applied to empty cars, resulting in flat wheels.



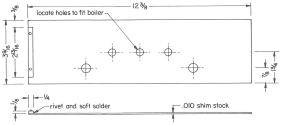




ENGINE BRAKE – 1" SCALE – FOOT OPERATED

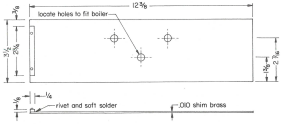
# boiler jacket

# building the RARITAN

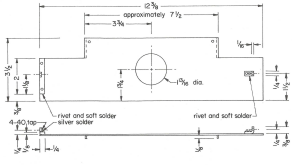
by William H. Morewood



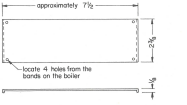

26-1 BOILER JACKET
Brass - 1 required



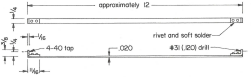

26-2 BOILER JACKET
Brass - 1 required



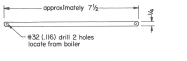

26-3 BOILER JACKET
Brass - 1 required




26-4 BOILER JACKET
Brass - 1 required




26-5 STRAP
Brass - 1 required




26-6 STRAP
.020 Brass - 1 required

WHM/wcf © WHM 1968

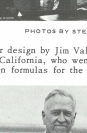
## BITS AND PIECES AT WVLS

On the fourth Friday of each month the West Valley Live Steamers meet at the Palo Alto-Salinos Bank in Cupertino, California. There are no officers, no business and the evenings are completely given over to technical talks and "bits & pieces".

For example: The February meeting included an illustrated talk on

PHOTOS BY STEVE VITKOVITS

boiler design by Jim Vale (1) of Felton, California, who went over boiler design formulas for the members.



Then Henry James of San Jose (2) gave a talk on pattern-making, using patterns for a cylinder saddle and other parts he is making for a 5" scale, 15" gauge engine.

These interesting get-togethers are open to all interested Live Steamers who are in the area. For further information, contact Dwight Durkee, P. O. Box 21, Cupertino, California 95014.

## NEW ENGLAND STEAM LAUNCH AND MODEL MEET AT STEAMTOWN USA

Saturday, August 22nd, will be a big day at STEAMTOWN USA in Bellows Falls, Vermont. The day will feature the *New England Steam Launch and Model Meet* and it will be a wonderful time to visit with other Live Steamers, display your own equipment and view the work of your friends. Plans include the launching of a new 35-foot fiberglass steam launch, the *Vatne Fjord*, built by Dr. Vatne of Springfield, Vermont.

There will also be the Steamtown Museum where nearly 100 steam engines, cars and machines are on display plus the round trip steam train trip from Steamtown to Chester, Vermont. A very nominal admission fee is charged for entrance to the museum and, of course, the $2.50 adult round trip fare on the steam train trip. (Children 5-12 half fare, under 5 free.)

Those attending the meet will gather on the edge of the Connecticut River where there are shade trees and it is suggested that you bring your own picnic lunch. There is no track for running Live Steam locomotives, but if you have a treadmill or test track, bring it along so you can fire up and operate. You might consider bringing along some fittings and provide steam for some of the stationary engines at the meet.

One item of interest on display will be the compound steam engine that hopefully will power a Steamtown Launch someday.

Here's a good chance to spend a summer week-end of steam – whatever your particular phase of interest might be. If you need additional information, contact Richard M. Mitchell, % Steamer "River Queen", Brattleboro Road, Hinsdale, New Hampshire 03451.

## 3" SCALE TIE PLATES AND SPIKES

There is constantly growing interest in 3" scale equipment in the Live Steam field... and as the interest picks up the need for materials becomes more obvious.

Spikes for 88 and 128 rail are now available and there have been reports that tie plates are being made by one of the railroad track equipment firms for that size rail.

Anyone having information on these items is asked to contact W. T. Mitchell, 391 North 20th Drive, Phoenix, Arizona 85009 who is active in 3" scale.

## YM-SP RR BLS

If that heading looks like a computerized error at the typesetters, fret no more. It merely means that the Yosemite Mountain – Sugar Pine Railroad has a special Welcome Mat out for Live Steamers travelling from the BLS National Meet at Los Angeles.

Since LIVE STEAM Magazine featured the three-foot gauge Shay-powered railroad in December 1968, all track is completed to the bottom of the canyon giving a four-mile round trip ride. "Slabtown Loop" at the end of the line encircles a deeply wooded picnic grove where passengers may step over to lunch or hike. A special 15% discount is offered to members of the Brotherhood of Live Steamers who stop by to take the train trip.

*The Logger* leaves hourly on the hour from 10 a.m. to 5 p.m. daily, beginning on Memorial Day and speeder rides can be arranged during off hours. See their ad elsewhere in this issue for further information.

## NEW CLUB OFFICERS . . . in Oakland

John Curtiss became President of the Golden Gate Live Steamers, Inc., at an election held on December 12th. With John, Earl Chanda will serve as Vice President, Louis Bradas, Jr. will be Treasurer and Joe Bryan is the club Secretary. These men will have a particularly busy term in office while the club begins its move to a new location.

## in Milwaukee

The office of President in the Milwaukee Light Engineering Society, Ltd., is an honorary position. At its February meeting the group elected William C. Fitt, Editor and Publisher of LIVE STEAM Magazine, as its first Honorary President. Hugh Crane was elected to the office of Vice President, Herb Markwiese as Treasurer and Jack D. McKenty as the club's Secretary. All facets of the Engineering Hobby are represented in the MLES membership and a Railroad Division of the club is busy trying to locate a site for their track.

## in Lomita

The Southern California Live Steamers have elected Grove Lawrence to the Presidency for 1970. Bob Furlong will serve with Grove as his Vice President, Ray Holgate will be Treasurer and Vit Vitalis is the Secretary. The SCLS meets at the facilities adjacent to Little Engines in Lomita on the third Sunday of each month.

# DRAWINGS MISSING

## OH! WHAT FUN IT IS TO RIDE . . .

Over the years there have been many pleasant meetings of Live Steamers at George White's home in Garden City, Michigan. From time to time George has loaned out some of the drawings he has for full-size locomotives but in taking inventory recently he discovered that he had no record for some of them!

Of greatest concern is a set of nearly 50 drawings for a PRR Class D–16sb 4–4–0 which he loaned to someone but, in the rush of activity of a house-full of Live Steamers, neglected to record the name. There are also drawings for a DL&W 4–6–0 camelback and the side elevation drawing for a DT&I 2–8–0.

If you have borrowed any of these from George, would you call him or drop him a line so he can know where they are and when he might expect them back?

Winter doesn't mean a complete stop to activities for Live Steamers as this photo by David M. Conroy shows. Although it was February 22nd in Hannibal, New York, the mercury rose to 48° for a few short hours. Out came the snow shovel, Dave's 3/4" Atlantic and the camera. As Robin Letson made a run with the engine, Dave caught this picturesque shot of snow, stream and steam.

## June

5 NEW JERSEY LIVE STEAMERS
Advance registration required
3¼" – 7¼" gauges
Ralph W. Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 — 353-4424

6 IOWA MODEL STEAM
7 ENGINEERS
3½" — 4¾ — 7½" gauges
Pershing G. Scott
R.F.D. 1
Marion, Iowa 52302

13 GOLDEN GATE LIVE STEAMERS
14 3½" – 5" – 4¾" – 7½"
Joe Bryan, Secretary
1225 Scott Street
El Cerrito, California 94530

## July

11 ONTARIO SUNPARLOR LINES
12 3½" – 4¾"
Jack Hart, Secretary
1381 Shepherd Street
Windsor, Ontario, Canada

18 PUGET SOUND LIVE STEAMERS
Railroad Meet
4¾" – 7½" – 12" gauge
B. R. Steinhauser's track
4628 72nd N. E.
Marysville, Wash. 98270

## August

1 SOUTHERN MINNESOTA LIVE STEAMERS
Al O'Neil's Track
3½" – 4¾" – 12"
Lake City, Minnesota

2 PALATINE, LAKE ZURICH & WAUCONDA RAILROAD
3rd Anniversary Meet
4¾" gauge
Frank Saville
512 Miller
Barrington, Ill. 60010
Phone 312 – 381-3970

8 PUGET SOUND LIVE STEAMERS
Steamboat Meet & Saloon B.B.Q.
Vashon Island
Everett A. Arnez, Secretary
Route 4, Box 530A
Sedro Woolley, Wash. 98284
Phone 206 – 856-3663

22 NEW ENGLAND STEAM LAUNCH AND MODEL MEET
Marine, Stationary, Traction,
Locomotive Steamtown USA –
Bellows Falls, Vt.
Richard M. Mitchell
¾ Steamer "River Queen"
Bonthiebore Road
Hinsdale, New Hampshire 03451

## September

5 PENNSYLVANIA LIVE STEAMERS
6 3½" – 4¾" – 7½"
7 William H. Scott, Secretary
201 – 1 Bay Drive
Sellersville, Pa. 18960

12 IOWA MODEL STEAM
13 ENGINEERS
3½" — 4¾" — 7½"
Pershing G. Scott
R.F.D. 1
Marion, Iowa 52302

12 GOLDEN GATE LIVE STEAMERS
13 3½" – 5" – 4¾" – 7½"
Joe Bryan, Secretary
1225 Scott Street
El Cerrito, California 94530

18 NEW JERSEY LIVE STEAMERS
19 Advance registration required
20 3½" – 4¾" – 7½"
Ralph W. Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 — 353-4424

23 ONTARIO SUNPARLOR LINES
27 3½" – 4¾"
Jack Hart, Secretary
1381 Shepherd Street
Windsor, Ontario, Canada

## October

3 SOUTHERN MINNESOTA LIVE
4 STEAMERS
Al O'Neil's Track
3½" – 4¾" – 12"
Lake City, Minnesota

9 PIONEER VALLEY LIVE
10 STEAMERS
11 3½" – 4¾" – 7½"
Brenton W. Barnfather, Secretary
3 Fleetwood Drive
Sandy Hook, Conn. 06482

## Regular Run Days

GOLDEN GATE LIVE STEAMERS
Every Sunday weather permitting
3½" – 5½" – 4¾" – 7½"
Joe Bryan, Secretary
1225 Scott Street
El Cerrito, California 94530

JAMUL VALLEY RAILROAD
3rd Sunday each month
7½" gauge
Harry F. Haas
Route 1, Box 67 A
Jamul, California 92035

LOS ANGELES LIVE STEAMERS
1st Sunday each month
3½" – 4¾" – 7½"
Joel Corbin, Secretary
12723 Kinglet Street
North Hollywood, Calif. 91606

MONTREAL LIVE STEAMERS
1st Sunday of each month
3½" – 4¾" – 7½" gauges
L. H. Galloway, Secretary
53 Brentwood Road
Beaconsfield, Quebec, Canada

NEW JERSEY LIVE STEAMERS
Every Sunday May through October
3½" – 4¾" – 7½"
Ralph W. Green, Secretary
845 Kilsyth Road
Elizabeth, N. J. 07208
Phone 201 — 353-4424

PACIFIC NORTHWEST LIVE STEAMERS
Every Sunday, May through October
4¾" – 7½" gauge
Route 2, Molalla, Oregon
H. S. Hoover
1425 S. E. Flavel Street
Portland, Oregon 97202

PENNSYLVANIA LIVE STEAMERS
June 14, July 12 & 26, Aug. 9,
Sept. 20, Oct. 4 & 18
William H. Scott, Secretary
R.D. 1, Box 409
Sellersville, Pa. 18960

PIONEER VALLEY LIVE STEAMERS
2nd Sunday each month
3½" – 4¾" – 7½"
Brenton W. Barnfather, Secretary
3 Fleetwood Drive
Sandy Hook, Conn. 06482

RAILROADERS CLUB OF SAN ANTONIO
3rd Sunday each month,
weather permitting
7½" gauge
Ces Beck
2626 McCullough Avenue
San Antonio, Texas 78212

RIVERSIDE LIVE STEAMERS
4th Saturday- Sunday each month
Hunter Park- Iowa & Columbia Ave.
Riverside, California
Engine House Phone 714 – 683-9628
Francis H. Smith, Secretary
5536 Dewey Avenue
Riverside, California 92504
Phone 714 – 688-9533

SOUTHERN CALIFORNIA LIVE STEAMERS 7½" gauge
3½" – 4¾"
Vic Vitalie, Secretary
2135 West 250th Street
Lomita, California 90717

WABASH, FRISCO & PACIFIC
Every Sunday
12" gauge
Grand and First Streets
0.4 miles south of Post Office
Glencoe, Missouri

WAUSHAKUM LIVE STEAMERS
2nd Sunday each month
April through November
New track at Hollliston, Mass.
3½" completed
4¾" under construction
George Hildreth, President
357 Bishop Street
Framingham, Mass. 01701

**LIVE STEAM OFFICE**

will be closed
May 23rd through June 14th
to attend the

**BLS NATIONAL MEET**

**See You There!**

**BLAST FURNACE 2400 F**
SINCE 1935

Live Steamers ★ Hobbyists
Make your own castings of any metal from cast iron down to lead and zinc. Available in 6 sizes, 1½ to 20 lbs. Complete units from $50.40 to $162. Send 25¢ for circular — refundable.
Wheeled Version $2995

**KANSAS CITY SPECIALTIES CO.** Kansas City, Missouri 64106

**WABASH MOGUL**
**PLANTATION ENGINE "CHLOE"**
For information on castings write
**ALLEN MODELS**
1194 N. Patterson Ave., Goleta, CA 93017

**3/4" – 1½" Scale**
**Castings, Blueprints and Materials**
**16 Engines in CATALOG #3 – $1.00**
**FRIENDS MODELS**
**R.F.D. Topsfield, Mass. 01983**

3/4" SCALE NYC HUDSON
**Castings, drawings, freight trucks, wheels, bolsters, springs. Write for list.**
**CARL HOFFMAN**
**25 Thornridge Crescent**
**Kitchener, Ontario, Canada**

*Black line prints from original Cooke, Manchester and Ritsdle Island Works tracings. Send 50¢ for the lists of drawings.*
C. A. PURINTON
R.F.D. Boxford, Mass. 01921

Live Steam
BOUND VOLUME
**THREE**
Includes all 1969 issues
**AVAILABLE NOW – $12.00 EACH**
Durable green cloth binding, gold stamped with LIVE STEAM logo and extensively cross-indexed.
VOLUMES 1 AND 2 SOLD OUT
**LIVE STEAM**
Post Office Box 629
Cadillac, Michigan 49601

# mail stop

## IT'S ALL YOUR FAULT!!

It's all your fault!! You turned this ordinary railroad nut into a hopelessly happy Live-Steam-Nut! Starting with that May '68 issue on *building the RARITAN* and continuing on by joining a steam club, you got me started on building those wonderful engines. The only punishment fit for such a crime is my saying, "Thank you very much."

And getting that Magazine back on schedule was the last straw!

RICHARD A. KOSTURA
102 LAUREL ROAD
CHAGRIN FALLS, OHIO 44022

## NO ALUMINUM FOR TENDERS?

In his otherwise excellent article on tenders, Joseph Nelson states, "Aluminum is definitely not recommended due to its high rate of corrosion when in contact with water."

Here in Ontario we have thousands of *fresh water* lakes upon which, during the better weather, thousands of aluminum pleasure boats can be seen. My friends have owned aluminum boats for upwards of ten years with no complaints regarding the onset of corrosion.

My wife has in almost daily use, aluminum cooking utensils that are over 25 years old and they frequently have salt-bearing concoctions boiled up in them! As yet no signs of corrosion.

On the other hand, the jacket on the boiler of my *Juliet* is of aluminum alloy. At the point where a stem or water leak struck the jacket (the water containing boiler fluid) a small hole appeared after some months of operation. However, this is a very severe type of service, quite different from its use in a cold, clean water tank.

Furthermore, the author has stated, "Aluminum is impractical for tenders since joints are hard to seal." I just can't imagine anyone taking *that* one seriously! At any auto parts store in North America, we can buy "Gasket-Goo", and this stuff will pretty well seal any metal joint we are likely to meet up with in Live Steam. From the (aluminum) water tank to the backhead jewelry I have personally used it for nearly 20 years now on my 2½" and 3½" gauge locos. I am in good company, for there must be actually thousands of aircraft flying with the fuel tank joints sealed tight against leakage by nothing more than a bead of a close relative to my favorite "Gasket-Goo!"

GEORGE HILL
2251 OLD CARRIAGE ROAD
MISSISSAUGA, ONTARIO, CANADA

*(We submitted the above letter to Joseph F. Nelson for his comments and print them below. Ed.)*

## NO ALUMINUM FOR TENDERS!!

ALUMINUM DOESN'T RUST!!! That sales pitch has been heard on radio and television for a long time and, in effect, it is true. However, *it does corrode* under the same conditions that steel rusts! Its incidence of corrosion is recognized in Military Specifications on surface finishes of aluminum. I had over 20 years experience designing mechanical equipment for G.C.A. Radar Trailers and shelters and in spite of surface protection such as anodizing, iridite, zinc chromate primer, etc., I saw many cases where moisture would get in under the sealant and destroy an aluminum surface. One trailer in particular lost a whole roof. Incidentally, paint doesn't stick to an aluminum surface very well unless the surface has been previously prepared by a metal treatment.

I will agree with Mr. Hill that the *skilled artisan* can build a leak-proof tender and maintain it free of corrosion. However, my article is written with the average person in mind who is perhaps building something for the first time in his life and doesn't know any of the answers.

Speaking of kitchen utensils being corrosion free; this is because they are washed *and dried* after each use. Where pots and pans have outlived their usefulness in the kitchen, they are subject to moisture with no wiping dry. After rain, dew and other moisture contacts the aluminum, small white spots appear – then holes. Many people don't drain their tenders

during the running season, and those who do can't dry the insides like they can cooking utensils – the result is a moist surface for a week or more. As for aluminum boats, most of their surfaces are treated against corrosion and prepared for painting, and since they are small boats they are usually not left in the water but are loaded on a trailer, dried off, and driven home where they are washed off and dried again if they have been operating in salt water.

Now let's look at aluminum liquid cooled automobile engines. The Marmon auto introduced the aluminum cylinder block and body in 1916 to take advantage of light weight; corrosion licked it! In 1924, Studebaker introduced the aluminum cylinder head that was going to revolutionize the internal combustion engine; internal corrosion soon eliminated it in favor of cast iron. Some of the early Ford V-8's had aluminum cylinder heads that became scrap in a few years because of corrosion. Except for racing engines that were drained after each race, aluminum was not successful in automotive engines until water was eliminated from the cooling system and solutions of ethylene glycol were used in its place. Therefore, water in contact with aluminum will cause corrosion and eventual failure if it cannot (or will not) be dried out after each use; magnesium is even worse.

As for sealing water reservoirs in tenders: I will agree that a fuel or water tank can be sealed with Permatex or many of the modern plastics where a skilled worker is doing the job. The average novice, however, feels that "goop" is a cure-all for every situation and will use it as a substitute for good workmanship or proper mating of sheet metal. Also, he can't be made to realize that "goop" isn't a structural material. Another thing: after a joint or surface has been "goop'ed", it is almost impossible to clean it off well enough to tin it if it is a material that can be soldered. I have seen many novice builders use pipe "goop" on straight thread tubing and expect to hold water or steam pressure; it won't work there but it's all right on taper threads. Permatex has its place and I use and recommend it, but I don't use it where silver solder or 95–5 can be used . . . which can't be done with aluminum. I have never had any boiler, plumbing or tender leaks in the 14 years of operating my locomotives.

I therefore recommend that anybody except the most highly skilled and *disciplined* builder and operator, stay away from aluminum tenders since the water tank will be wet (or moist) enough to cause corrosion in many cases.

JOSEPH F. NELSON
7006 THIRD AVENUE
LOS ANGELES, CALIF. 90043

### CYLINDER OIL ADDITIVE

I read recently of someone's experiments with STP and steam cylinder oil so I wrote the company. This is their reply: *STP Oil Treatment, in a 20% by volume mixture with your cylinder oil, will provide an excellent steam cylinder lubricant. The product does not contain any free sulfur or any other ingredient that will have a harmful effect on bronze or copper alloy material.*

PAUL L. DEVERTER II
12114 TAYLORCREST
HOUSTON, TEXAS 77024


When writing to advertisers please mention that you saw their ad in

Live Steam

If you want to know more about this interesting road and the Ten-Wheelers featured in this issue of LIVE STEAM Magazine, then order a copy of

**THE RUTLAND ROAD**

*by Jim Shaughnessy*

365 pages, 450 photos (including more than thirty of the F–2j class) 8½ x 11 inches and still only

$10.00

**LIVE STEAM**

Post Office Box 630 Cadillac, Michigan 49601



**RUTLAND DRAWINGS**

Erection Card drawings of the Rutland Railroad's Class F–2j 4–6–0's at 1½" Scale. Two large (25" x 72") drawings give elevations and sections . . adequate information to build from N gauge on up through all the Live Steam sizes. Order your set now for only $5.00 postpaid from

**Walter H. Allen**

962 Greenland Road
Portsmouth, N. H. 03801



**1" Scale Cars**
**Kits - Parts**
Free List

**D. E. Wagner**

906 Coach Road
Blackwood, New Jersey 08012



**CANADA-U.S.A.**

Materials, etc., for the Model Engineer
Custom-built Locomotives
Castings for L.B.S.C. Locomotives to order.
Stuart Turner
A. J. Reeves & Co. Castings
MYFORD 7 and SUPER 7
Lathes and Attachments
PERRIS
TOM SENIOR
New Catalog – $1.00

**PEN MODELS**

THE "STEAM SHOP"
259 Carolyn Drive
Oakville, Ontario – 844-6418
Open Evenings and Weekends
Visitors Welcome



LOCOMOTIVE – STATIONARY – MARINE
Castings, Fittings, Plans and Books
Shop Service available for
new and repair work
CATALOG – 25¢
**SHIP MODELS, LTD.**
Andover, Mass. 01810



1½" scale trucks, couplers, stake pockets, frogs, drivers, etc. Send 25¢ for photo and information

**EVERT BRUMLEY**
Route #4, Box 222
Winchester, Indiana 47394



**MODEL BOILERS**
Built and Repaired
Also Boiler Parts Formed Out
**MODEL BOILERS**
Box 178 Ventura, California 93001



ACCURATELY SCALED
**115 lb. A.R.E.A. RAIL**
**1½" Scale** 18¢ per foot
25¢ for sample
**Paul B. Culp**
617 Fanshawe Street
Philadelphia, Pa. 19111
Phone 215 – 342-9532



LOCOMOTIVES BUILT TO ORDER
Machined to any stage

**Torn's Machine & Engineering Co.**
808 Mc Phaul Street
Austin, Texas 78758

Steam Engines, Castings, Prints. Some machined, finished. Miniature Spark Plugs, fittings, Hexagon Bolts, Nuts, Books, Metals. Some new items, such as Holt Caterpiller Castings and Worthington Pump Castings. Innumerable selection.

**Illustrated Catalog $1.25**

**COLE'S POWER MODELS**

**VENTURA, CALIFORNIA 93002**

**Live Steam Locomotives**
1968 Catalog

Just bolt 'em together

You can have a backyard Railroad complete steam powered — including all accessories. Complete kits, all machine work done, you just "Bolt 'em together. Also available in rough form. Or you'll perform a exiting thrill by building from scratch. Send 50c for the BIG CATALOG containing FOUR STEAM POWERED RR. in our 160-page catalog. Price ..... $4.00

LITTLE ENGINES Box H, Lomita, Calif. 90717
Established 35 years

**BACK AGAIN!!!**
**1½" Scale 36'-6" STOCK CAR**
Completely Assembled BODY or
UNDERFRAME KITS
MILLED CLEAR LUMBER SHAPES
CARS AND STRUCTURES
Send 25c in coin for information

**M&W ZIMMER MODELS**
P. O. Box 340
Argo, Illinois 60501

## ...from the cupola

WE MADE IT!!!

After nearly two years of delays, the April issue went out on time . . . and we hope that we will be able to keep it that way. The gang at Cadillic Printing Company has been a big help and many times has interrupted four-color press setups to squeeze out an issue of LIVE STEAM Magazine. Our favorite Vari-Typist, Sharon Kohl, has put in all sorts of weird hours to get our type ready which was sent to her without any regard for other schedules she might have. Good wife Doris has done Yeoman's work — putting in a 40-hour week as receptionist in town and working late hours night after night to get subscriptions entered, addresses changed, mailings tabulated, books ordered, records kept and countless other details in order. Our son, Paul, has been a big help, too . . . getting homework done after a long evening session of addressing a mailing, taking care of household and yard chores to permit us to keep working on the perpetual "next issue", and using his hair-trigger sense of humor to get us laughing hardest when the load seemed heaviest!

But you, the readers who stuck with us, deserve a big hand as well. At times (and there were many) when it would have been an easy matter to chuck this whole project, one or more of you always managed to come along with a letter or phone call that suddenly made it all seem worth while. This editor defers his thanks to each and every one of you.

The thought now attends to that which lies ahead. First will be the task of clearing up the back-log of correspondence. With a mail receipt of 6,000 letters a year and well over half of them requiring some response, we haven't made much of a dent in the pile by allocating one day for correspondence between each issue!

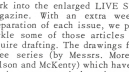
It was simply a choice between writing letters or getting a magazine out — and we concentrated on the latter. There are also countless hundreds of pictures which have been submitted and used which were filed as each issue was completed. They, too, will be returned shortly.

With the August issue, we will begin our fifth year of publication and that will signal a couple of important changes. One will be an increase in the number of pages in each issue which will permit us to give you coverage of specific phases within the hobby that appeal to various segments of our readership. The other change will be in the subscription rate: $5.50 per year in the U.S.A. and Canada, $6.50 per year elsewhere. Since the current rates were established in January, 1968, we have absorbed production cost increases in excess of 100%. We had hoped that increased circulation would cover these added expenses but nothing in this day and age seems able to successfully beat costs! There has been some increase in the amount of advertising and the size of the ads and we are working hard for more. An increase in the size of the Magazine and the resulting increase in material will also broaden our field of potential advertisers.

There is some very exciting news now pending and details should be complete so that an announcement can be made at the BLS National Meet in Los Angeles. It cannot be revealed at this time but will be covered in the July issue.

We are now sifting through the material that has accumulated in the past to see what we will be able to work into the enlarged LIVE STEAM Magazine. With an extra week for preparation of each issue, we plan to tackle some of those articles which require drafting. The drawings for the three series (by Messrs. Morewood, Nelson and McKenty) which have been running concurrently have been all we

FULL-SIZE DRAWINGS AND CASTINGS FOR
**building the RARITAN**
for additional information write
**William H. Morewood**
**18 Laning Avenue - Pennington, N. J. 08534**



could possibly handle, but we're looking forward to some of those projects that have repeatedly been put aside. There's a whistle, several attachments for a lathe, all kinds of braking systems, more ways of using three-phase motors on a single phase supply, valve gear theory, casting facilities, power reverse, a stationary engine and on and on . . . PLUS the big news mentioned above. We'll plunge into them head-first after a three-week break to attend the BLS National Meet and visit a few Live Steamers in the Southwest on the way back. Relaxed and refreshed we will be ready to tackle our fifth year with a renewed dedication to make LIVE STEAM Magazine so good that *every* Live Steamer will want to subscribe!

– W. C. F. –

## The Extra Board

Fifteen words or less not including name or address: $2.00 in advance, 10¢ per word for additional copy. No commercial ads of any kind accepted for this column.

### WANTED

Old Electric and Wind-Up trains, also quality scale "O" gauge. Top cash. Al Stauler, Route 4, Medina, Ohio 44256.

Back issues LIVE STEAM Magazine. 1966: Oct., Nov., Dec. 1967: Jan., Aug., Sept., Oct., Nov., Dec. 1968: Jan., Feb., Mar. State price, condition. Preston W. Kelly, 288 Pepper Ridge Rd., Stamford, Conn. 06905.

Vol. 127 thru 132 "Model Engineer" bound or unbound. Other certain volumes also. George G. Scott, Outlook, Mont. 59252, phone 406 – 895-5215.

Vol. 116 "Railway Mechanical Engineer", "Locomotive Cyclopedia of American Practice" of either year 1944, 1945, 1946 or 1947. February 1947 "Model Railroader", July 1956 "Trains". D. A. D. Munro, 17a Lichfield Rd., Stone, Staffs, England.

### FOR SALE

1" scale 4–6–2 locomotive and tender. Little Engines castings, copper boiler. $1,500. Ronald Beckman, 1832 Avenue G, Council Bluffs, Iowa 51501.

1" scale S.P. P–13, 630 class with 16,000 gal. Vanderbilt. Can be seen at Tom's Machine and Engineering Co., 808 McPhaul St., Austin, Texas 78758, phone 836-0574 or contact Max T. James, 4010 Brookview Rd., Austin, Texas 78722, phone 512 – 476-1447.

For sale or trade for steam locomotive in any condition. All engines in new condition, trade any or all: 1 – 3" x 4" single cylinder simple; 1 – 4 HP tandem compound; 1 – 2 HP Steeple compound; 1 – 1" x 1" uniflow 2 cylinder; 1 – ½" x ½" double-acting and boiler; 1 – ½" x ½" wobbler; 1½" x ½" single-acting spool valve 2 cylinder; 1 – V–4 cylinder ½" x 1" wobbler; above engines are vertical. 1 – ½" x 1" wobbler; 1 – 1-1/8" x 2" single cylinder; these engines horizontal. 1 small boiler less fittings; 1 – 2 HP boiler, oil fired. Del Bude, 542 North 114th St., Wauwatosa, Wisconsin 53226.

12" gauge precision built 3400 class Santa Fe steam locomotive, tender and six cars and new rail. Send $1 for photos and details. K. E. Reynolds, 110 S. Tyler Rd., Wichita, Kansas 67209.

BASEMENT CLEANOUT: ¾" scale caboose $75; LBSC's "Maisie" 3½" 4–4–2, blueprints, book on how to build, casting, frames cut out $35; casting for 3" trucks $6; production set up for 10¼" Atlas lathe comprising of slotted table, 4-position tool post and turret tail stock $40; steam whistle 2¼" Dia., 6" long $10; clockmaker's lathe 5 x 15 $35; many parts for Atlas 10¼" lathe; Hardinge 4C collets, new $1 each. David Sobel, 93 Gerry Rd., Closter, N. J. 07624.

Keppel Ind. RR Builder's plate for sale $5.00 or trade. Three varieties: 1910–1920; 1920–1930; 1930–1950. R. H. Werner, Jr., 45 Spooner St., Plymouth, Mass. 02360.

2½" gauge 0–4–0 switcher A–1 shape, 2 injectors, axle pump, good steamer, $1,200. Don Michalski, 4011 S. 50 St., Milwaukee, Wisc. 53220.


SANDLEY LIGHT RAILWAY EQUIPMENT WORKS INC.
№ BUILDERS 1
WISCONSIN DELLS, WISCONSIN

15 INCH GAUGE
STEAM
LOCOMOTIVES
$15,000 TO $50,000

ROLLING STOCK
$2,500 TO $6,000

CODE BOILERS
LIGHT RAILWAY
SUPPLIES

BUILDERS SINCE 1936
SANDLEY
P. O. BOX 164
WIS. DELLS, WIS.
53965

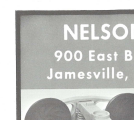
1¼" scale roller bearing truck kits, coupler and draft gear kits and complete gondola kits. Illustrated brochure and photos – 25¢.

BUCKEYE
Model Car & Foundry
BOX 828 - PORTSMOUTH, OHIO 45662

REAL STEAM TRAINS
15" – 16" – 24" – 36" Gauges

"LITTLE TOOT"
Send for FREE circular
CROWN METAL PRODUCTS CO.
WYANO, PENNSYLVANIA 15695

NELSON W. GRAY
900 East Brighton Avenue
Jamesville, New York 13078



send for
free list
TRUCKS
SWITCH STANDS
CAR KITS
1" SCALE

# LIVE STEAM RAILROAD

2 Inch Scale 4-8-4 Locomotive

Automatic Air Brakes - Operating Block Signals

**2 MILE ROUND TRIP**

write or call for schedules

**OUR 23rd YEAR**

## CENTERVILLE & SOUTHWESTERN RAILROAD

Livingston Avenue - Roseland, New Jersey 07068 (201) 226-2003

---

**CANADIAN STEAM POWER CATALOG**

A list of hundreds of genuine Mechanical Department drawings by CN, CP, Montreal and Canadian Locomotive Works.

1½" scale Erection Card Drawings for 25 CNR–GTR–CPR locomotives – caboose, trucks, architectural drawings – photos – over 250 locomotive parts detail drawings, all available at a nominal price.

PLUS 26 Diagram Sheets loaded with information about the locomotives.

Drawing list – $1.50 Diagrams – $2.00

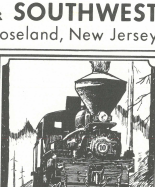
**Complete Catalog – $2.50**

(US Funds in US; Canadian Funds in Canada) (Personal checks – add 15c check exchange)

**William Dykeman**

890 Bay Avenue, Bathurst, N. B. Canada

---



**Ride THE LOGGER**

Ride a steam powered narrow gauge railroad near Yosemite Nat'l Park, running over part of the historic grade of the Madera Sugar Pine Co.

Shay locomotive powered ride offers unequalled scenic views of the Sierra from open cars twisting through majestic pines & cedars in the Sierra Nat'l Forest at the 4900' elevation.

Depot located next to the **Swiss Melody Inn**, only 4 miles from Yosemite Nat'l Park's south entrance on highway 41.

Trains running daily Memorial day to Sept. 15 th

**Tickets 15% off to B.L.S. Members**

**YOSEMITE MT.-SUGAR PINE RR.**

YOSEMITE MOUNTAIN, FISH CAMP, CALIF. 93623

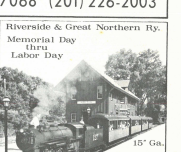
PH. 683-7273 AREA 209

Operating under U.S. Forest Service Special Use Permit

---

Riverside & Great Northern Ry.

Memorial Day thru Labor Day




---

**Flat River & Southern R.R.**

commercial 7½ in. gauge

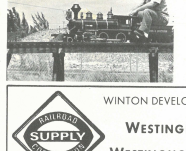
**Visitors Always Welcome**

**Open Thursday thru Sunday**

**Other Times: 842-0523 or 848-4496**

**501 Northlake Boulevard**

**North Palm Beach, Florida**



---

Battery-powered electric

**LOCOMOTIVES**

**POWERFUL - READY-TO-RUN**

**1½" SCALE**

Photo and description 25¢ from

**STEVEN L. EASLON**

1840 Avenida Del Norte

Fullerton, California 92631

---

WINTON DEVELOPED

**WESTINGHOUSE STEAM DRIVEN WATER PUMP**

**WESTINGHOUSE STEAM DRIVEN AIR COMPRESSOR**

AS DESCRIBED IN OUR NEW CATALOG

ACCURATE REPRODUCTION OF THE REAL THING

EXTREME SIMPLICITY ABSOLUTE RELIABILITY

TESTED AND READY TO RUN $225

## RAILROAD SUPPLY CORPORATION

115 South Victory Boulevard, Burbank, California 91502

Phone 213 – 845-1727 or 213 – 849-1351